

THROMBUS JANCAI NEW SPECIES (PORIFERA, DEMOSPONGIAE, ASTROPHORIDA) FROM SHALLOW WATER OFF JAMAICA

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ABSTRACT

Thrombus jancai new species (Thrombidae) was collected in a cave at 30 m depth, near Chalet Caribe, Montego Bay, Jamaica. Other species of *Thrombus* are known only from depths exceeding 100 m, with one possible exception. The new species differs from other *Thrombus* spp. in the size of the sponge, the size and types of acanthotriaenes and in the occurrence of amphiasters which are known from one other species only.

Following Hartman (1982) the Thrombidae are “. . . represented by the single genus *Thrombus*, having a spiculation of small, minutely spined triaenes including plagiotriaenes, dichotriaenes, and trichotriaenes (with trifurcate clads). Amphias- ters are present as microscleres in one species. The ectosomal megascleres are oriented with the clads tangential to the surface . . .”.

According to Hooper and Wiedenmayer (1994) the amphiasters are absent from one known species. Actually the amphiasters are absent in three species (*T. kittoni* (Carter, 1874), *T. challengerii* Sollas, 1886 and *T. ornatus* Sollas, 1888) and known only from *T. abyssi* (Carter, 1873). Topsent (1904) described *T. abyssi* var. *niger* with amphiasters; this variety was cited later (van Soest and Stentoft, 1988) as *T. niger*.

T. jancai is the fifth species known from the genus *Thrombus*. While the genus is widely distributed (English channel, Ireland, Azores, Caribbean, New Hebrides, Seychelles and East Africa), the species themselves are rare and often known from their type localities only. Exceptions are *T. kittoni* and *T. abyssi*. *T. kittoni* was found twice: on the Atlantic coast of Panama and Barbados. The first description of *T. kittoni* was made by Carter (1874) on the basis of spicules “which were found free . . . in the neighborhood of Colon, Panama . . .” It has been found a second time, in Barbados by van Soest and Stentoft (1988). *T. abyssi* was recorded several times since Carter’s description: Topsent (1895, 1925, 1928); Stephens (1915); Pouliquen (1972); Pulitzer-Finali (1993); and Boury-Esnault et. al. (1994).

T. ornatus, Sollas (1888) has been described on the basis of isolated spicules too. Again, it was Carter who found the spicules among root tuft spicules of the hexactinellid sponge *Euplectella cucumer* and sent them to Sollas.

METHODS

A fragment of a large sheet-like sponge was cut out and dried. Hand-made thin sections and isolated spicules were studied under a light microscope. Additionally, isolated spicules, sputtered with gold, were investigated with a CamScan electron microscope.

SYSTEMATICS

Class: Demospongiae

Order: Astrophorida

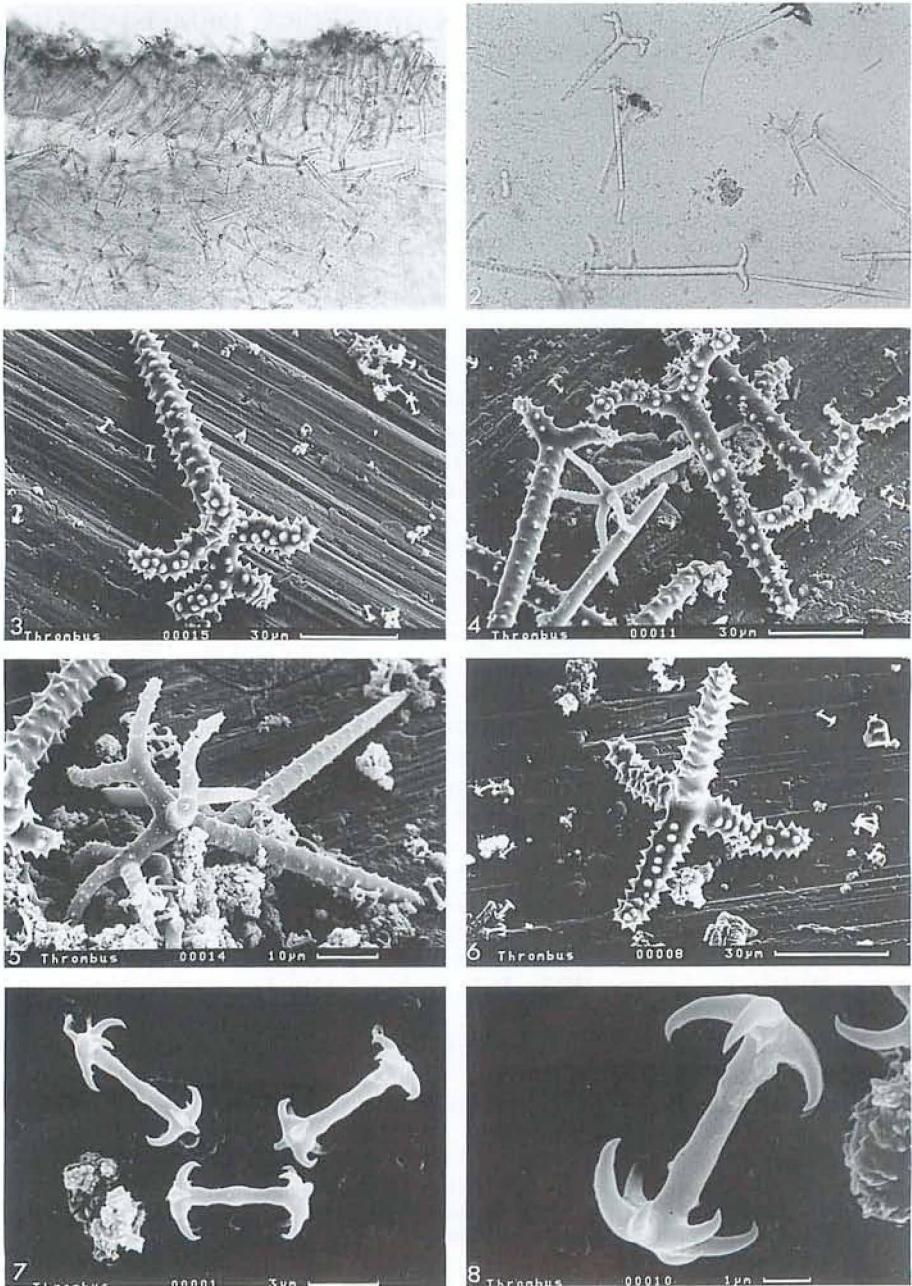
Family: Thrombidae Sollas, 1887

Genus: *Thrombus* Sollas, 1886

Thrombus jancai new species

Figures 1–8

Material.—Holotype, ZMA POR. 11414, collected 4 April 1995, 30 m depth, off Chalet Caribe, Reading, near Montego Bay, Jamaica.



Figures 1–8. Characters of *Thrombus*. Section perpendicular to the surface. Ectosome on top. Triaenes in the ectosome are arranged perpendicular to the surface with the clads facing outward. Spicule density is higher than in the choanosome where triaenes are irregularly distributed. Magn: 75 × 2. Low spicule density in the choanosome. Note different kinds of triaenes and numerous microscleres. Magn: 150 × 3. Acanthodichotriaene and several amphiasters. 4. Triaenes differ in shape and in size of spines. 5. Trichotriaene with very small spines. 6. Triaene with short shaft, resembling a calthrops. 7. Irregularly shaped amphiasters. 8. Amphiasters are somewhat knotty in outline and differ in the number of spines.

Description.—Holotype fragment of large, encrusting sponge nearly 1 cm thick which covered area of approximately 2 m². Grew on side of cave and was not everywhere attached to substrate, leaving spaces of water between sponge and substrate (like a sheet hung over side of cave). Consistency elastic but tough, not easy to cut, similar to rubber. Color in life dirty white. Surface smooth and no oscules apparent to unaided eye. Fragment dried and measures 3.5 × 2.5 × 0.5 cm. With dark brown choanosome of hard consistency and thin, light yellowish-grey translucent ectosome. On upper side more or less circular opening, 2 mm in diameter, probably oscule.

Skeleton.—Ectosome, triaenes densely packed and orientated with clads facing outward, in most parts of sponge only one layer of orientated triaenes, but occasionally ectosome consists of up to three layers of triaenes all with clads facing outward. Triaenes in choanosome distributed irregularly. Density of triaenes very low in choanosome compared to ectosome.

Spicules.—Acanthotriaenes (83 spicules measured), length: 74.1-126.48-180.3 ± 35.12 µm (min.; mean; max., standard deviation). Diameter: 3.3-8.72-12.7 ± 1.86 µm (min.; mean; max.; SD). Biggest extension of clads range from 30.7-46.52-63.1 ± 6.83 µm (min.; mean; max.; SD). Most triaenes are acantho-dichotriaenes, rare trichotriaenes and types with short rhabds resembling calthrops, latter with length of 23-28 µm per ray, also occur. Rhabd often ends in acute tip. Density of spines on triaenes variable. Microscleres are amphiasters, 4-6 µm in length, and very abundant throughout the sponge.

Etymology.—Named after my friend and dive-buddy Philip Janca. Without his knowledge and his help the present species would still be undiscovered.

Remarks.—*T. kittoni* (Carter, 1873), *T. challengeri* Sollas, 1886 and *T. ornatus* Sollas, 1888 differ from *T. jancai* in having no microscleres and smaller acanthotriaenes. The first mentioned two species are, following van Soest and Stentoft (1988), "considered specifically distinct in view of geographic separation."

T. ornatus Sollas, 1888 was described on isolated spicules only and was never found again so it could have had amphiasters which were not present in the sediment where the spicules were found. *T. ornatus* is reported to have trichotriaenes only with a shorter rhabd and larger clads so that it is regarded distinct from *T. jancai*. Furthermore *T. ornatus* is known from the Indian Ocean only and could be regarded as distinct from *T. jancai* because of geographic separation as argued by van Soest and Stentoft (1988) for *T. kittoni* (Carter, 1873) and *T. challengeri* (Sollas, 1886).

T. abyssi (Carter, 1873) and *T. abyssi* var. *niger* Topsent, 1904 have amphiasters as microscleres which are of the same size as in *T. jancai*.

The present species differs from *T. abyssi* in having larger acanthotriaenes which are normally, dico- and rarely trichotriaenes while all other authors reported exclusively trichotriaenes for *T. abyssi*. Carter described the shaft of the triaenes as "obtusely pointed above," a character which was not observed in the present species.

Pulitzer-Finali (1993) recorded *T. abyssi* from the Tanzanian coast but trichotriaenes measured are two to five times larger than all other records mentioned (Table 1), so that its assignment to *T. abyssi* seems doubtful. However, Pulitzer-Finali's specimen differs from *T. jancai* in having trichotriaenes only which are much larger than the ones in *T. jancai*.

Boury-Esnault and Uriz (1994) assigned their specimen to *T. abyssi* despite missing amphiasters because it contains trichotriaenes only. *T. challengeri*, the

Table 1. Characters and distribution of *Thrombus* species.

	Acanthotriaenes	Amphiasters	Distribution	Depth
<i>Thrombus abyssi</i> (Carter, 1873)	rhabd: 59.3 µm clad: 55 µm trichotriaenes rhabd: 60 µm clad: 55 µm trichotriaenes	5 µm	English Channel	915 m
Topsent, 1895	rhabd: 55–60 × 7 µm protoclad: 10 µm deuteroclad: 16 µm clad: 55–60 µm trichotriaenes	5 µm	English Channel	810 m
Stephens, 1915	rhabd: 55–60 × 7 µm protoclad: 10 µm deuteroclad: 16 µm clad: 55–60 µm trichotriaenes	5 µm	Coast of Ireland	457.5–991.9 m
Topsent, 1925	trichotriaenes described from isolated spicules	not mentioned	Naples	—
Topsent, 1928	protoclad: 65–68 µm rhabd: 56–70 µm trichotriaenes	present	Lanzarote	1,098 m
Poulliquen, 1972	rhabd: 25–45 µm clad: 35–55 µm	5 µm	Marseille	not given
Pulitzer-Finali, 1993	rhabd: 260–300 µm clad: 440–510 µm trichotriaenes	4.5–6 µm	Tanzanian coast	190 m
Boury-Esnault and Uriz, 1994	rhabd: 45–55 × 7–12 µm protoclad: 8–10 × 10–12 µm deuteroclad: 10–15 × 6–10 µm trichotriaenes	—	Moroccan coast	1,378 m
<i>Thrombus abyssi</i> (Carter, 1873) var. <i>niger</i> Topsent, 1904	rhabd: 65 × 10 µm protoclad: 8 × 10 µm deuteroclad: 15–20 × 6–8 µm trichotriaenes	5 µm	Azores	1,360 m
<i>Thrombus kittoni</i> (Carter, 1874)	total length: 19–1,800ths in shaft: 11 by 2–1,800ths in “...short shaft from one end of which 2, 3 or 4 arms spread...”	—	Atlantic coast of Panama	not given

Table 1. Continued.

	Acanthotriaenes	Amphiasters	Distribution	Depth
Van Soest and Stentoft, 1988	rhabd: $75-120 \times 12-20 \mu\text{m}$ clad: $65-150 \mu\text{m}$ normally trichotriaenes, plagio- and dichotriaenes common	—	Barbados	100 m
<i>Thrombus challengerii</i> Sollas, 1886	rhabd: $55-100 \times 11.8-15.8 \mu\text{m}$ clad: $35-55 \mu\text{m}$ trichotriaenes	—	New Hebrides	238 m
<i>Thrombus ornatus</i> Sollas, 1888	rhabd: $65 \mu\text{m}$ protoclad: $8 \mu\text{m}$ deutero-clad: $198 \mu\text{m}$ trichotriaenes	—	Seychelles	not given
<i>Thrombus jancal</i> sp. n.	rhabd: $70-180 \times 4-10 \mu\text{m}$ clad: $28-54 \mu\text{m}$ normal, dictyo- & trichotriaenes	$4-6 \mu\text{m}$	Jamaica	30 m

most probable alternative, has additionally dichotriaenes and plagiotriaenes and no amphiasters.

T. jancai has again larger acanthotriaenes than *T. abyssi* var. *niger* (Topsent, 1904) also Topsent reported only trichotriaenes as in *T. abyssi* (Carter, 1873).

There is one more unpublished *Thrombus* species which was found by Hartman and Hubbard in Trinidad. It has two size categories of acanthotriaenes (rhabd, large category: $250\text{--}480 \times 12\text{--}32 \mu\text{m}$; rhabd, small category $50\text{--}80 \times 6\text{--}16 \mu\text{m}$; clads: $7\text{--}18 \mu\text{m}$) and amphiasters which are $6\text{--}16 \mu\text{m}$ in length, (Hartman, pers. comm.). It is regarded distinct from *T. jancai* because of the existence of two size categories of acanthotriaenes and the different sizes of all occurring spicules.

All *Thrombus* species with amphiasters known so far occur within the Atlantic. *T. kittoni* (Carter, 1874) and some finds (Table 1) of *T. abyssi* (Carter, 1873) are the only Atlantic species without amphiasters while the two *Thrombus* species from the Indo-Pacific lack microscleres.

Pouliquen (1972) reported *T. abyssi* from caves near Marseille. Even if he did not give depths were specimens were found it sounds if it was in shallow water. If that is true then the two shallow water records from *Thrombus* were both found in caves, whereas the genus occurs on open substrates in deep water.

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